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# PATENT SPECIFICATION

419,351

Application Date: June 29, 1934. No. 19,269/34.

Complete Accepted: Nov. 9, 1934.

## COMPLETE SPECIFICATION.

### Improvements relating to Movable Floors for Vehicles.



We, SHELVOKE AND DREWRY LIMITED, a Company organised under the laws of Great Britain, and JAMES SIDNEY DREWRY, a British Subject, both of Icknield Way, Letchworth, in the County of Hertfordshire, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to movable floors for vehicle bodies, and is particularly applicable to refuse-collecting vehicles.

According to the invention a floor in the form of a belt or band made of fabric, rubber, or metal links, or otherwise flexibly constructed, is secured at one end to a roller and at the other end to a cable or like flexible element running to a winding shaft, that is to say to a shaft around which the cable or the like is wound when the belt or band is unwound from the roller. The winding shaft is separately connected to the roller in such a way that they rotate together, advantageously by means of a cable or like flexible element passing around a drum on the winding shaft and also around another drum on a shaft geared to the roller, the belt being wound up by this separate driving connection. The effective diameter of the belt or band varies as winding proceeds, decreasing as more of the belt or band is unwound from the roller, and vice versa, with the result that the length of the belt or band wound on or off the roller is not constant at a constant rate of rotation of the roller. In order to compensate for this variation in effective diameter a fusee drum is provided, either on the winding shaft to receive the cable or the like from the belt or band or on a shaft in driving connection with the roller, provided in this latter case that the separate connection between the roller and winding shaft includes a cable or like flexible element received by the fusee drum. The expression "fusee drum" is intended to include any form of drum which, when rotated at a constant rate, will wind a cable or like flexible element on or off at a rate that varies in exactly the same proportion to the speed

of rotation of the drum as the rate at which the belt or band is being wound off or on the roller varies in proportion to the speed of rotation thereof. By this means although the roller and winding shaft need not rotate at the same speed, they will always rotate at the same relative speed and yet no difficulty is introduced by the variation in the effective diameter of the roller. This makes it possible for both the winding and unwinding of the belt or band to be positive and to be effected from a single point. In the case of a refuse-collecting vehicle in particular, it is desirable that material should be loaded onto and discharged from the vehicle at the rearward end of the vehicle and that the winding should be effected at the forward end. Accordingly a winding handle may be directly geared to the winding shaft, which will be at the forward end if the roller is at the rearward end.

In the preferred construction the fusee drum is mounted on the winding shaft and this is connected by a cable or like flexible element to a shaft geared to the roller, which by virtue of this connection rotates at a constant speed relatively to the winding shaft.

There may be two or more belts or bands working side by side. Preferably, however, there is only one belt or band, one roller and one winding shaft, but the cable or like flexible element between the winding shaft and belt or band, the separate driving connection and the fusee drum are duplicated, one complete set of these elements being provided on each side of the vehicle body.

The belt or band or the cables or the like may stretch in use, and according to a further feature of the invention spring-loaded devices may be provided for taking up any slackness due to this.

In order that the invention may be clearly understood and readily carried into effect, part of one vehicle body constructed in accordance therewith will now be described by way of example with reference to the accompanying drawings, in which,

Figure 1 is an elevation, and

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Figure 2 is a plan of the parts in question, while

Figure 3 shows a detail on an enlarged scale.

5 The floor is supported by a part of the chassis frame 1 and consists of a thick rubber belt 2 running over rollers 3 supported in longitudinal members 4 of the frame 1. The belt is secured at one end  
10 to a roller 5 carried at the rear of the frame 1 and at the other end to a metal plate 6 on which are mounted two bell cranks 7 and 8. Flexible steel cables 9 run from these bell cranks 7 and 8 to fusee drums 10 mounted on a winding shaft 11. The fusee drums 10 are formed with helical cable grooves on conical surfaces, the diameters of these grooves  
15 varying in exactly the same proportion as the effective diameter of the roller 5 varies as the belt 2 is wound on or off it. The winding shaft 11 also carries two cable drums of uniform diameter connected by cables to cable drums 13, also  
20 of uniform diameter, these drums 13 being mounted on shafts 14 connected by gearing to the shaft of the roller 5.

A winding handle 15 is directly geared to one of the fusee drums 10. The vehicle  
25 is loaded at the back and as loading proceeds the belt 2 is gradually wound forwards by rotating the winding handle and thus winding the cables 9 on to the fusee drums 10. A vertical board 16 is provided at the inner end of the belt 2 to prevent material spilling forwards during  
30 loading and to assist in the complete discharge of material during unloading.

When it is desired to unload the vehicle  
35 the handle 15 is rotated in the opposite direction with the result that cables 17 connecting the drums 12 and 13 are wound on to the drums 12 and thus cause rotation of the drums 13. Accordingly the  
40 roller 5 that is connected through gearing to the drums 13 is rotated and winds the belt 2 on to itself.

As has been stated above the cables 9 are not directly connected to the metal  
45 plate 6 but to the pivoted bell cranks 7 and 8. These bell cranks are also attached to springs 18 which urge the bell cranks about their pivots to take up any slackness in the cables 9 such as  
50 might be produced by stretching either of the belt 2 or the cables 9. In order to prevent the pull exerted on the plate 6 and belt 2 by the cables 9 when the belt is being wound off the roller 5 from being  
55 exerted through the springs 18, the bell crank 7 is pivotally connected to a tube 19 which receives a rod 20 pivotally connected to the bell crank 8 and formed with a collar 21. When the cables 9 are  
60 under tension they pull the bell cranks 7  
65

and 8 about their pivots until the collar abuts against the mouth of the tube 19.

In order to take up any slack in the cables 17 the drums 13 are formed with internal projections 22 constituting abutments for dogs 23 fixed to the shaft 14 and connected by springs 24 to the interior of the drums 13. When the  
70 cables 17 are in tension, that is to say when the belt is being wound on to the roller, the shaft 14 is driven from the drum 13 through the abutment 22 and dog 23. The spring 24 serves to turn the drum 13 backwards relatively to the shaft 14 and thus to take up any slackness in  
75 the cable 17. 80

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we  
85 claim is:—

1. A movable floor for a vehicle body in which a belt or band is secured at one end to a roller and at the other end to a cable or like flexible element running to  
90 a winding shaft that is separately connected to the roller in such a way that the two rotate together, and in which a fusee drum is provided either on the winding shaft to receive the cable or the like  
95 or on a shaft in driving connection with the roller to receive a cable or like flexible element constituting part of the separate connection between the winding shaft and the roller, the fusee drum being so proportioned as to compensate for variation  
100 in the effective diameter of the roller as the belt winds on or off it.

2. A movable floor for a vehicle body according to claim 1, in which the fusee  
105 drum is mounted on the winding shaft which is connected by a cable or like flexible element to a shaft that is geared to the roller and that by virtue of the connection rotates at a constant speed relatively to the winding shaft. 110

3. A movable floor for a vehicle body according to claim 1 or claim 2, in which the body is arranged so that material is loaded onto and discharged from the floor  
115 at the rear end, and winding is effected through a winding handle directly geared to the winding shaft, which is placed at the forward end of the body.

4. A movable floor for a vehicle body according to any of the preceding claims, in which a spring-loaded device is provided to take up any slackness in the cable or the like between the belt or band and the winding shaft due to stretching  
125 of the belt or band or of the cable or the like.

5. A movable floor for a vehicle body according to any of the preceding claims, in which the separate connection between  
130

the winding shaft and the roller takes the form of a cable or like flexible element and a spring-loaded device is provided to take up any slackness in this cable or the like.

5 6. A movable floor for a vehicle body according to any of the preceding claims, in which the cable or the like between the winding shaft and belt or band, the  
10 separate driving connection and the fusee drum are duplicated, one complete set of these being provided on each side of the vehicle in conjunction with a single winding shaft, roller and belt or band.

15 7. A movable floor for a vehicle body according to claims 4 and 6, in which the cables or the like running from the wind-

ing shaft to the belt or band are anchored to pivoted spring-loaded members that are limited in the extent to which they may  
20 be rocked about their pivots against the springs by the tension in the cables or the like.

8. A movable floor for a vehicle body, constructed substantially as described  
25 with reference to the accompanying drawings.

Dated this 29th day of June, 1934.

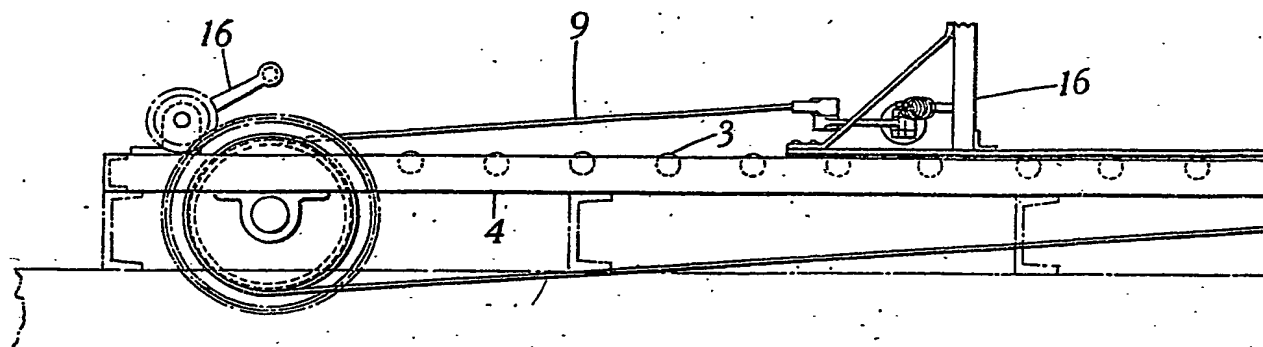
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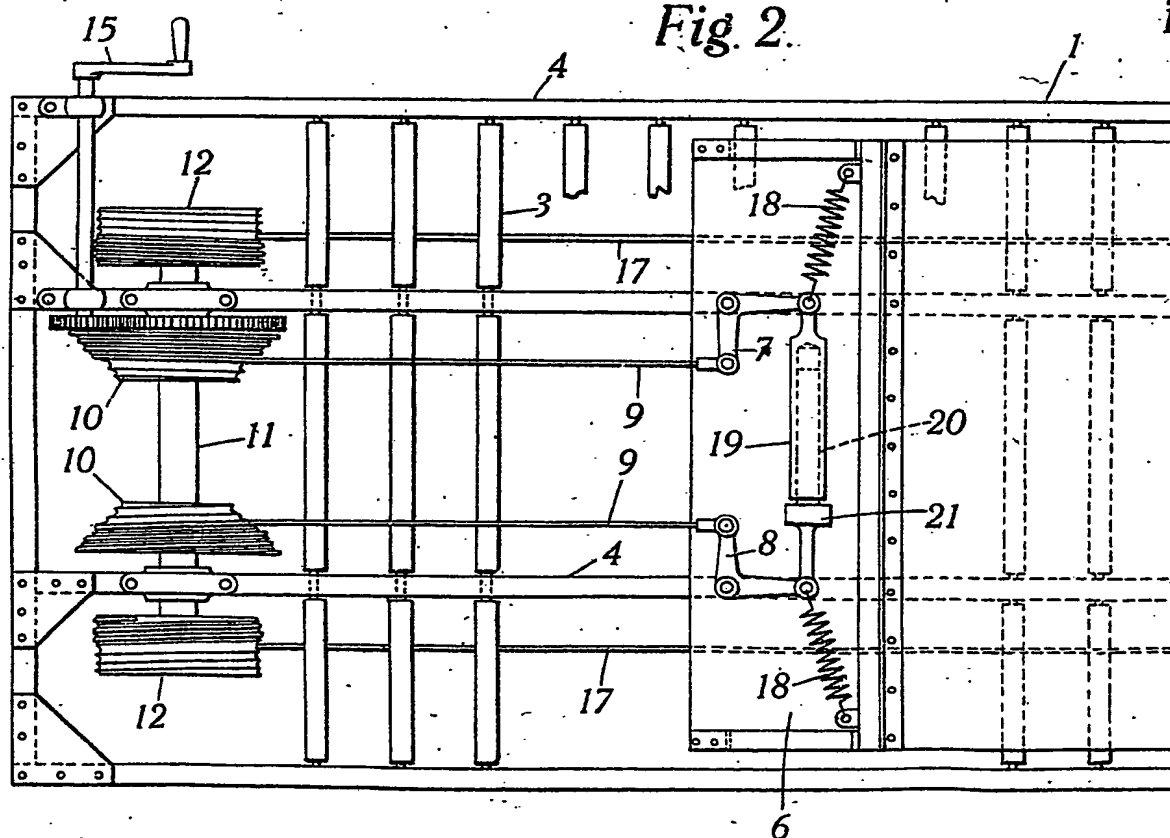
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Redhill: Printed for His Majesty's Stationery Office, by Love & Malcomson, Ltd.—1934.

*Fig. 1.*



*Fig. 2.*



*[This Drawing is a reproduction of the Original on a reduced scale.]*

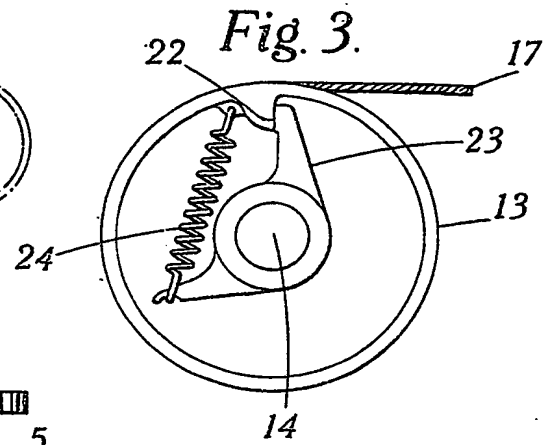
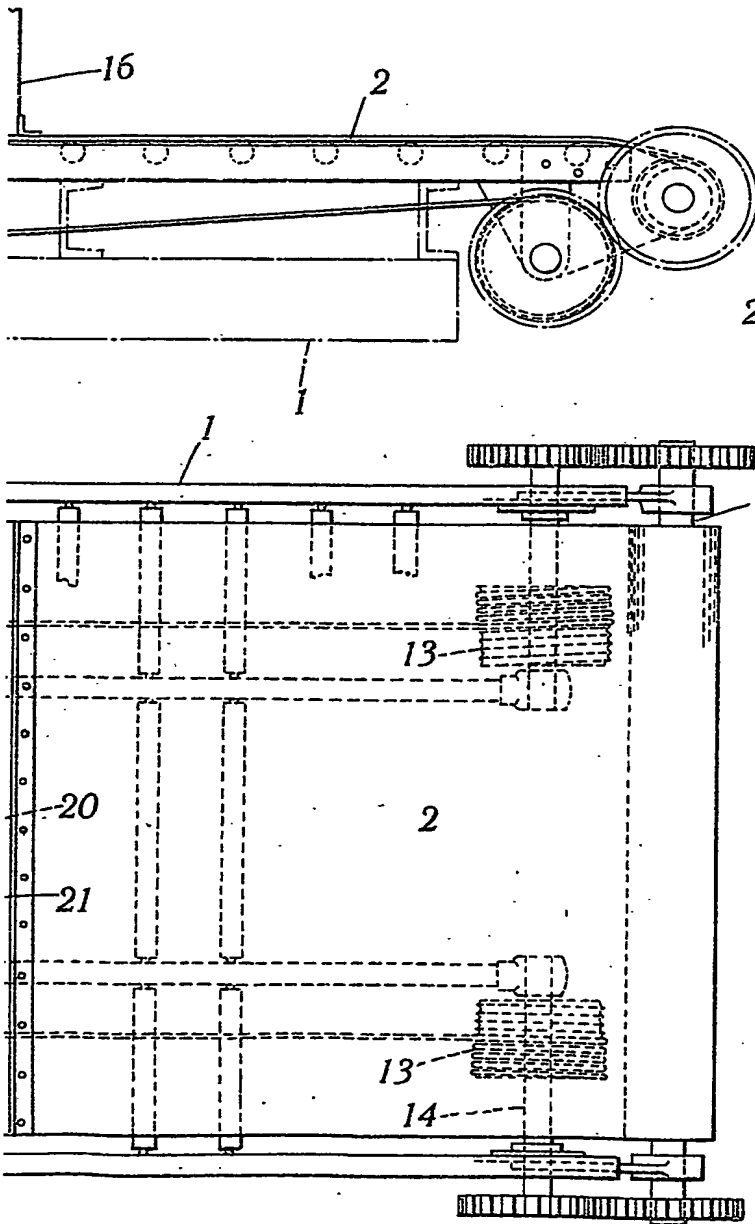


Fig. 3.

[This Drawing is a reproduction of the Original on a reduced scale.]